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Germany

Bio-Fuels

First Biogas Plant Using 70 Percent Chicken Manure as Feedstock Inaugurated

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Approved by:

Rey Santella
U.S. Embassy Berlin

Prepared by:

Sabine M. Lieberz

Report Highlights:

The supposedly world's first biogas/biomethane plant that runs on 70 percent chicken manure as a feedstock was officially inaugurated in Baasdorf (Eastern Germany) in August 2008. Compared to a standard biogas plant that runs predominantly on corn silage, the Baasdorf plant needs a lot less acreage for the production of feedstock while simultaneously providing an environmentally friendly way of disposing chicken manure. If economically viable, biogas plants of these kinds could stir biogas production out of the line of fire in the food versus fuel debate.

Includes PSD Changes: No
Includes Trade Matrix: No
Annual Report
Berlin [GM1]
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On August 8, the Wimex/Gut Mennewitz GmbH in Baasdorf, Saxony-Anhalt, a leading German producer of broiler hatching eggs and day old chicks, officially inaugurated the supposedly first biogas/biomethane plant in the world that uses up to 70 percent dried chicken manure as a feedstock for biogas production. Corn silage and grass silage from landscaping make up the remaining 20 and 10 percent of feedstock, respectively. Previously, the amount of chicken manure was believed to be limited to about 30 percent because of its high nitrogen content, which inhibits the microorganism activity.

Details on the Process

The company *Rueckert Naturgas*¹ has developed a new process *NatUrgas*[®] (patented for Europe) that allows high percentages of manure in the feedstock mix. The feedstock is mixed and diluted with water before it is fed into a fermenter where microorganisms produce biomethane and CO₂ through anaerobic fermentation. The biomethane is forwarded into a combined heat and power plant (CHP) where it is used to produce electricity and heat. Meanwhile, the fermentation residue is separated into solid and liquid fractions in a so-called “decanter”. The solid fraction is dried and pressed into pellets for use as compost. The liquid fraction is further separated by means of ultra filtration and reverse osmosis² into 25 percent highly concentrated liquid fertilizer and 75 percent process water. The latter is reverted into the process at step one.

Advantages of Using High Percentages of Chicken Manure

a) Economic benefits

- Lower volumes of food related agricultural crops needed, hence less discussions about “food versus fuel”;
- Lower feedstock costs;
- Lower feedstock transports costs as the biogas plant is located near a big poultry hatchery operation.

b) Environmental benefits

- Reduction in methane emissions compared to untreated chicken manure;
- Reduction in odor compared to untreated chicken manure;
- Elimination of dust when spreading the chicken manure on the fields;
- The fermentation process destroys germs, pathogens, and weed seeds present in the chicken manure. This potentially reduces the need for herbicide and fungicide use on fields where chicken manure is applied.
- Fermentation improves the fertilizing quality of chicken manure because it not only retains all the nutrients in the chicken manure but makes them better accessible to the plants.

Specifics of the Gut Mennewitz Biogas Plant

With a capacity of 2.1 MW electricity (3 units of 716 kW) and 2.23 MW heat per hour, the plant can supply the electricity needed for about 4,600 households and, in addition, replace 1.8 million liters (475,000 gallons) of heating oil. The produced electricity is fed into the public power grid while the heat is currently used to heat the chicken stables and the office buildings of the hatchery. In the future, it is expected that the heat will also be used to heat an administrative building of the city of Koethen and to dry corn for chicken feed. At full

¹ For more information about the company and the process please refer to <http://www.rueckert-naturgas.de/index.php?id=12&L=1>

² For details on ultra filtration and reverse osmosis please see <http://en.wikipedia.org/wiki/Ultrafiltration>
http://en.wikipedia.org/wiki/Reverse_osmosis

capacity the plant will use about 25,000 MT of chicken manure and 10,000 MT of corn silage and grass silage annually.

Background: Biogas Production in Germany

In 2007, Germany reported about 4,200 operational biogas plants. These plants predominantly run on corn silage and other plant silage materials and to a limited extent cereals and manure. About 350,000 to 400,000 hectares of farm land were used to produce the required feedstock. The German government supports biogas production through the *Renewable Energy Law* (EEG), which entitles biogas producers to a fixed price for electricity inserted into the public power system. The per-unit-compensation ranges between 0.124 € and 0.195 € per KWh. Power companies initially pay for the fixed prices, but ultimately the cost is borne by consumers.

Related reports:

Report Number	Title	Date Released
E48063	Biofuels Annual http://www.fas.usda.gov/gainfiles/200806/146294845.pdf	05/30/2008